Eggs identified as a risk factor for sporadic *Salmonella* serotype Heidelberg infections: a case-control study in FoodNet sites

Hennessy T, Cheng L, Kassenborg H, Desai S, Mohle-Boetani J, Marcus R, Marcus R, Shiferaw B, Angulo F, and the FoodNet Working Group

Background: Although *Salmonella* Heidelberg has often been isolated from poultry and is the fourth most common serotype isolated from humans in the United States, sources of sporadic S. Heidelberg infections have not been well-identified. We conducted a population-based case-control study in five Foodborne Diseases Active Surveillance Network (FoodNet) sites (CA, CT, GA, MN and OR) in 1996-1997.

Methods: Cases were identified via active laboratory-based surveillance patients were interviewed about exposures during the 5 days before illness onset. Controls matched by age and neighborhood were interviewed about exposures during the same 5-day period.

Results: During the 12-month study, 44 patients and 83 controls were interviewed. Illness was associated with eating eggs prepared outside the home (matched odds ratio [mOR]=6.4, 95% confidence interval [CI]=2.1-19.4), particularly runny eggs (mOR=12.2, 95% CI=I.5-99.5). In addition, illness was associated with eating chicken prepared outside the home (mOR=2.5, 95% CI= 1.046.0). In multivariate analysis, however, eating eggs prepared outside the home (mOR=6.2, 95% CI=I.2-31.7), particularly runny eggs (mOR=11.1, 95% CI=I.2263.1), remained the only significant risk. factor for illness. The population attributable risk of S. Heidelberg infection associated with eating eggs prepared outside the home was 33%, 56% of which was due to eating runny eggs.

Conclusion: In this study of S. Heidelberg infections, eating eggs is the strongest risk factor for illness, control measures to prevent S. Heidelberg infection should include educating consumers to avoid eating undercooked eggs and educating food handlers and consumers about proper handling and cooking of eggs. Further studies should determine the potential internal and external contamination of eggs with S. Heidelberg, which may lead to the identification of interventions to minimize contamination throughout the food supply, including on the farm, at retail, and in the kitchen.

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